

LUMBER and its UTILIZATION

VOLUME IV

CONSTRUCTION INFORMATION SERIES

CHAPTER I

PLANNING *and* DESIGNING SMALL HOUSES



NATIONAL LUMBER MANUFACTURERS ASSOCIATION
WASHINGTON, D. C. CHICAGO, ILLINOIS

Preface

The dwellings of any people are the surest indication of their strength. Our highest civic ideals spring from sources which have their origins in happy, thriving communities. Since the enlightened community offers the best field for the merchandizing of lumber, the interest of the lumber industry in improving small house architecture in America might result from no motive other than the seeking for commercial gain. The motive, however, lies deeper than this.

It is a common sight in residential sections of our cities to see unsightly rows of houses of the type which are built by the mile and sold by the foot. They are identical in design, planning, and setting. If careful attention had been given to the fundamental principles of good planning and designing, these same dwellings could have been built with far more pleasing results and at no greater expense. Those who build small houses become responsible not only for creating the desire to build attractively and economically, but also for preserving the ideals which lead people to build beautiful homes with loving hands and eager hearts.

No attempt is made to discuss style, ornamentation, and other purely artistic qualities of small house architecture from the standpoint of the architect or artist. It is recognized, however, that good planning and good designing are so closely dependent upon construction that it is impossible to use lumber economically without calling attention to certain principles of architectural design. This has been done. To justify investment in small houses good architecture should never be separated from good construction. Either without the other means dollar waste and the sacrifice of personal comfort and convenience.

The small house is typically American. Thousands are being built every year, many of them on the supposition that the art of small house architecture is independent of its materials. Sense of proportion and the laws of structure are based in great part on the material employed. The material in turn has an important bearing upon the design. Since lumber will continue to be the favorite material for small house construction, those who build small houses should be familiar with the best practices in planning and designing.

If this appeal leads to better planning and designing of small houses a step forward in community development will result; the small house architecture of America will reflect the home ideals of the nation, and the constructive purpose of the lumber industry will have been served.

For the photographs used in illustrating the principles discussed herein, credit is due the "National Builder" and the Creo-Dipt Company, Inc.

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PLANNING AND DESIGNING SMALL HOUSES

S MALL HOUSES often become old-fashioned long before they wear out—a result usually of poor, illogical design. Good planning and good designing survive changing customs, and from generation to generation produce the homes that never go out of style. There is no surer way to spread an appreciation of good planning and designing than by practicing it. Good planning is most essential in the small house because strict economy in plan and materials is necessary to bring the small house within the financial reach of the prospective owner.

The lumber industry feels that an appreciation of good architecture in small house building is necessary for the development of congenial American community life. The fundamental principles of good small house architecture are herein illustrated in their application to lumber-built homes.

It has come to be recognized that a community has a right to require that no building be erected that is unsafe or dangerous to health. But there is not the same concern that no building be erected that mars the surrounding landscape. In a very real sense every house is an integral part of community life even though the law is not invoked to compel all builders to follow sound architectural practices. Community spirit manifesting itself in the desire for home ownership has been more effective than any law could be in bringing about a demand for good architecture. We have come to know that the highest levels of our community

life today are the sound guarantee against the erection of unsightly dwellings.

Characteristics of Good Architecture

The characteristics of good architecture are simplicity, straightforwardness, and truth. Fashions and fads are avoided. Good architecture is preeminently practical and in small houses can be accomplished at low cost. The most humble dwelling may have all the elements that make a perfect architectural unit. Consideration must be given to a study of the most suitable style of house for the location consider-

ing the requirements of the family, the climatic conditions, the availability and suitability of building materials, the comparative costs in terms of service, and the limits of the purse. Unessentials and wasteful features wherever used produce complicated construction, inappropriate use of



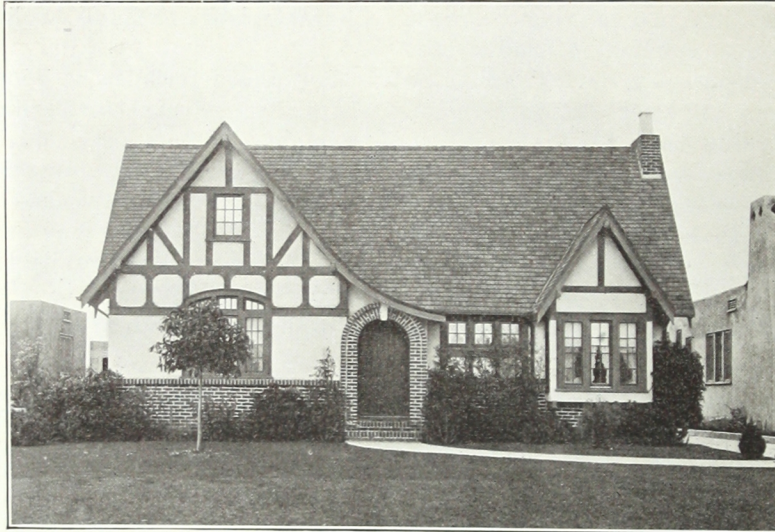
The Dutch Colonial

materials, and dollar waste. Good architecture for small houses is largely common sense so applied as to make the difference between a house, which is a mere shelter from the elements, and a home, which is beautiful, comfortable, and durable.

The Permanency of Good Architecture

Many of the new houses shown in current architectural magazines are almost exact replicas of the buildings of two hundred years ago. The designers of the old colonial buildings in-

variably followed the dictates of good design and common sense. The buildings of the Civil War period and of the period from 1870 to 1890, on the other hand, are too often impractical in plan and lacking in simplicity of design. Many of them are crowded with useless extravagant ornament. Few of these buildings, as well as some built during the period from 1900 to 1910, have substantial permanent value.



Half-Timber Type

Surroundings

The natural conditions of the lot must be taken into consideration before determining the plan and style of the house. Grade, permanent trees, exposure to the sun and wind, street frontage, and the types of homes in the neighborhood are important factors. The house plan should be adapted to the size and shape of the lot. Broad lots should have a type of plan in which the end of the house faces the street. When shallow lots force the placing of the house near the street, the use of hedges, gateways, and enclosed porches will partially offset this disadvantage.

The Elevation

The elevation should be studied with the plan in order to produce a good design. For appearance, as well as for good drainage, the ground should slope away from a building in order that the building may not seem to be standing in a hollow.

Plan More Important Than Design

A good plan must grow from the foundation up. Each part of the structure must have its

function, and each sub-division of the plan must be studied with respect to the other parts. While it is true that the architect or designer

must give simultaneous consideration to plan and design, plan should govern the details of design.

With the exception of the Colonial type, small houses usually assume an unsymmetrical form. The units of all forms are the square or the rectangle. Geometry plays an important part in the

planning of small houses. The various geometrical units usually are arranged around a center line or axis or around a number of such lines or axes, and the dominant unit ordinarily is placed first. Other units are added to it in pleasing and interesting combination. The outstanding characteristic of the modern plan is compactness—elimination of useless rooms. Rooms are fewer in number than formerly and the rooms most frequently used are larger. The “back parlor” as well as the small den, the sewing room, and intricate hallways are not included in a well-planned small house.

The same principle that applies to house planning in general, also applies to room planning. The “axis rule” should govern in laying out openings in the wall and providing architectural furniture. Groups of windows, important doors, fireplaces, and other large or important features should likewise be placed on an axis. Each room or unit should have a distinct geometric plan of its own, even though a number of rooms open one upon another. One very good way to determine the shape of a room is to imagine the plan of the ceiling rather than the plan of the floor, for the ceiling plan is never

continuous as is the floor plan. Correct planning requires first a study of room arrangements and their sizes; then stair and window locations, allowances for adequate wall space for usual furniture, and step and labor-saving devices,—in other words, a plan of the home from the “inside out”.

In the arrangement of rooms, space economy is essential. Means should be provided for getting easily from one part of the house to another. Generally speaking, all of the rooms on the first and second floors should be reached from the hall. Stairways almost invariably should lead direct from halls rather than from rooms. The living room should occupy the most desirable part of the house from the standpoint of exposure to the sun and view. A sun-room opening into the living room is a valuable addition which may be used twelve months in a year. Bedrooms, first of all, should be so placed as to be well ventilated. Whenever possible, there should be windows on two sides. The value of clothes closets depends as much on proper proportioning and arrangement of the doors as on size. A shallow closet or a very deep narrow one is of little use. For stairways a width of four feet is desirable. If the stairs must be narrow, wide landings should be provided to permit turning large pieces of furniture. Ceilings should not be too low, and tops of the windows should not be too far below the ceiling. The kitchen should be designed as a well-lighted, well-ventilated workshop and such economic considerations as the saving of steps, convenience of equipment, and the personal comfort of the occupant should re-

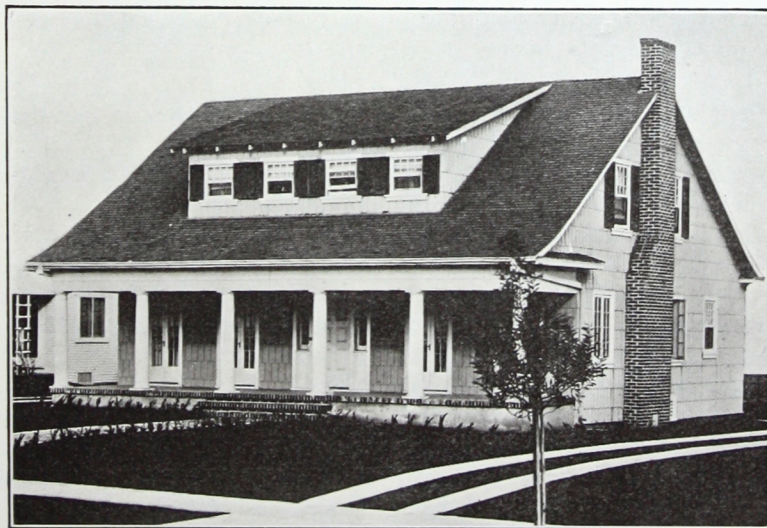
ceive attention. The kitchen is of such importance that it should receive the second choice of location in the house, the living room having the first.

Economy in Proper Sizes of Rooms

In considering economical sizes of rooms, attention is called to the fact that custom and habit have established practice so far as lengths of lumber are concerned. Too frequently unused lengths of joists, studs, flooring, and siding are strewn about houses nearing completion. Ultimately they are used for fuel. Great economies would result if trade custom could be readjusted to provide an outlet for short and odd length building lumber. This subject is treated at some length in the chapter on “Waste Prevention and Better Utilization”, Chapter 6 of Volume 3. This bulletin, however, is based on the use of even length joists and studs.

In buildings, joists are placed sixteen inches on centers with an allowance of from three to four inches for lapping against studs. The most economical width, therefore, for a lumber-built house with one span of joists is six or eight inches less than an even width measuring from

the inside of studs. If the building is over twenty feet in width, the joists will be in two lengths and a lap over the intermediate bearing partition must be included in figuring the amount of joist lumber required. This lap results in a six-inch loss of material. In planning floor layouts, it always should be re-



One and One-half Story Shingle Bungalow

membered that short ends cut off of joists instead of being useless, will make excellent fire stops without additional expense.

The Principle of Small House Design

There is not much danger in small house design that the exterior of the house will fail to indicate the nature of the structure. Nevertheless, truthfulness in design cannot be emphasized too strongly. In order to have a good design grow logically out of a sound plan, it is necessary to consider the various characteristics of the materials that are used. The practical, the sensible, and the convenient form the best possible foundation for good appearance. Pretentiousness is out of place in small house design. Features which are solely ornamental are unsuitable whenever the requirements are strictly utilitarian. To avoid extravagance, therefore, every effort should be made to strengthen the principle of small house design. This principle is simplicity.

The Principle of Small House Design Applied to Different Small House Types

The two-story house has many advantages that the bungalow does not possess, the most important advantage being in cost. Maximum economy of construction may be achieved by reducing floor and roof areas to a minimum. The Dutch Colonial house shown on page 3 affords a full second story. It can be economically built and economically maintained after it is built.

Lumber frequently is used on exteriors in combination with other materials. Half-timber houses, such as the one shown on page 4, have been used since the middle ages. In early work, the exposed timbers were the actual supporting frame of the building, the spaces between the timbers being occupied by a brick filling. In present day construction, the half-timbers are applied to the sheathing.

The shingle bungalow shown opposite the half-timber type is economical in first cost and upkeep. The shingles used for the exterior wall surfaces are longer and thicker at the butt end than the ordinary sixteen-inch standard roof shingle.

A thatched roof effect obtained by the use of bent shingles produces a pleasing effect.

The house illustrated on page 7 is a practical house of the old New England farm house type

modernized by the addition of a sleeping porch. Gutters and all exterior finish are of lumber.

Flexibility in design is possible in the unit plan house shown on page 8. The fact that the small house may be built as a perfect unit permitting the addition of other units at a later date, without disturbing the harmony of the original plan, is another distinct advantage of the lumber-built house.

For centuries, narrow overlapping boards, known as clapboards, were used for lumber siding, just as they are today. They consisted of thin beveled boards four to eight inches wide. Later, thicker siding with a shiplap or tongue and grooved joint was used. This type of siding is diversely known as drop siding, novelty siding, rustic siding, and patent siding. Frequently, boards ten to fourteen inches wide are used for suburban residences.

A stucco house appeals to many people who are sometimes deterred from using stucco believing that in order to build a durable house they must pay the extra cost for hollow tile or brick. As a matter of fact, just as fire resistive and durable a house can be built, and more economically, by the use of metal lath and plaster on lumber studding. In some sections, wood lath is preferred to metal lath and if properly used will give durable wall construction and at less expense.

Choice of Lumber in Small House Design

That woods must be studied individually has been recognized, and within the past decade careful and scientific study has been made of the peculiarities of species with respect to drying, handling, and use. Many species at one time considered unsuitable for building construction are now found to rank high in usefulness.

The most serious deficiency in the erection of the cheap house, built usually for speculative purposes, is not that the frame contains a few timbers or boards with knots but that too often timbers are used green and the frame is not properly nailed and braced. When the green timbers shrink, as they necessarily do, the nails loosen, their efficiency is reduced, and the frame racks. The solution lies in the use of well-sea-

soned lumber. Green lumber should not be used in home building.

Because of their cheapness, serviceability, and ease of working, softwoods are used exclusively for structural members in small houses. The principal structural woods in point of production are southern pine and Douglas fir. For ordinary house construction it is not necessary to use the more expensive grades of structural timber, for the cheaper grades are of sufficient strength for all practical purposes. Other structural woods, such as hemlock, Norway pine, and the common grades of white and western pines, cypress, and redwood are used extensively in certain localities.

Siding

In the usual lumber-built house, the siding is made of 1" x 4", 1" x 6", 1" x 8", or 1" x 10" boards which overlap at the joints to keep out the weather. The siding gives a stiffness to the stud wall. It is known by a number of names according to the design of the cross-section and joint. In warm climates, the siding often is placed directly upon the studs; sheathing is omitted in such instances and only a thin layer of building paper placed between the studs and the sheathing boards. Clapboards, or weatherboards, sometimes called bevel-siding, are made up of narrow boards usually $\frac{5}{8}$ of an inch thick at one edge and $\frac{1}{4}$ of an inch thick at the other. Such boards vary in width, being either 4", 5", or 6". They do not give the stiffness to a building that siding does, so when such boards are used they must be placed on sheathing. When board and batten surface treatment is resorted

to, the boards are placed vertically and the joints are covered with the batten. Usually such boards are 1" x 10" or 1" x 12" and the battens are either plain or o.g. 1" x 3". In order to provide nailing for these vertical boards, horizontal pieces must be cut in between the studs. Vertical grain shingles that measure 6 shingles to 2" in thickness provide an excellent and economical form of wall covering. Shingles 16 inches long may be exposed to the weather 5 inches or more.

Sheathing

Sheathing placed on the studs under the siding and the siding itself should be matched or ship-lapped and placed horizontally or diagonally; the boards should be of standard thickness and width. Boards over 8" in width are not recommended on account of warping. There is some difference of opinion as to the real value of diagonal and horizontal sheathing but whichever is used should be covered



Old New England Farm House Type

with paper or sheathing quilt with carefully lapped joints to insure a perfectly tight wall. If a very warm wall is desired, thick felt or material with similar insulating qualities should be placed between the studs.

Studding

Standard studding, such as 2" x 4" lumber, 16" on centers, should be bridged with horizontal or herringbone bridging. Floor plates are single and ceiling plates double with the joints lapped at the corners. All studs should be spiked or toe-nailed to the floor plate with two

nails. In a balloon framed house, the second story joists rest upon a 1" x 4" ribbon laid into the studs. All wide openings should be carefully trussed or should have wide lintels to prevent deflection and cracking of plaster. It is necessary to close effectively concealed open spaces in the walls or floors so that air cannot pass the barriers. **Firestops, consisting usually of solid lumber blocking, or mineral wool, crushed mortar, plaster, concrete, hollow tile, or gypsum block may be used effectively.** Volume 5, Chapter 2, "Fire-Stopping in Dwelling Construction", should be read carefully in this connection.

Roof Coverings

The roof always plays an important part in the design of a small house. Shingles provide as satisfactory and economical a roof covering as they do a wall covering. Vertical grain shingles that measure 5 shingles to 2 inches in thickness should be used for this purpose and care should be taken to see that they are nailed with rust-proof nails. Sixteen-inch shingles should be placed 5 inches to the weather. Climate determines whether shingles should be placed on roof sheathing with open joints or on matched boards with paper underneath.

Of the many other materials in common use for roofing purposes, such as slate, clay tile, metal tile, composition, and asphalt shingles, the latter is the only material that can compete with wooden shingles in price and it can compete only in the poorer grades which are less durable than good wooden shingles.

Porches and Outside Details

In porches, the important thing is to keep untreated lumber from contact with the moist ground in order to prevent rot. If the lumber to be used depends largely upon locality, the designer usually has no choice. What has been said in reference to material for porches applies also to porch floors. Such floors may be made 17/16" thick to advantage. They should be laid in white lead. It is important to slope the floor properly to insure quick drainage.

Eaves, ceilings of porches, soffits, exterior stairs, and other similar outside details should be made of lumber instead of metal because

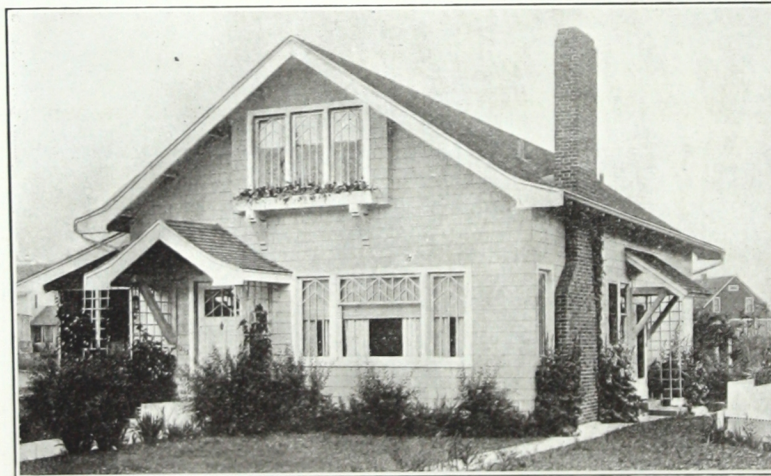
lumber when properly used lasts longer. It is essential that such members be jointed to keep out moisture and that drip moulds be provided and tin flashing be used where a joint would not otherwise be tight.

All exterior wood-work should be kept properly paint-

ed. Ordinary creosote oil or stain is a satisfactory substitute for paint on shingle wall surfaces where good penetration can be secured.

Wide Choice of Lumber in Interior Finish

Southern pine and Douglas fir are used extensively for interior finish. One or the other is available in nearly every community. These woods, Arkansas soft pine (shortleaf), and Douglas fir, particularly, are beautifully marked. Other species, such as cypress, white pine, western pine, and sugar pine generally are used for sash, doors, and millwork. Redwood, for many years used as the chief finishing wood in California, is being introduced in the middle



The Unit Plan House

west and eastern states both for exterior mill-work and interior finishing lumber. Cypress lends itself well to natural finishes. Gum and birch make an excellent substitute for mahogany.

Those hardwoods most commonly used for standing finish are oak, birch, and gum; for floors, oak, maple, birch, beech, and sometimes tupelo are used. Cypress, walnut, sycamore, and chestnut are a few of the other domestic woods used for finishing.

Floors

For the average span (about 14'), floor joists, 16 inches on centers, nominally 2 x 10 are sufficient in size if cross-bridged down the middle of the span. Upon these, excepting in the cheapest work, is placed an underfloor of 1 x 6 matched or plain boards, then deafening felt, paper, or quilt, and often floor strips, and the finished floor. The hardwoods most commonly used for top or wearing floors are oak, maple, birch, beech, and tupelo. To these hardwoods, southern pine and Douglas fir should be added as excellent material for wearing surfaces. Edge-grained or quarter-sawed fir and southern pine flooring have the advantage over flat-grained. In addition to the flooring constructed of standard boards or strips made from 1 x 3 inch stock, tongued and grooved, parquetry and thin strips either jointed or with a plain edge are in common use. Plain thin strips are used on top of old floors.

Doors

Interior doors of hardwood should be veneered on a softwood core. Wide panels should be laminated, that is, built up of thin layers with the grain crossed, preventing warping. Stock hardwood doors are built in this way. Veneered doors are not satisfactory for outside use unless the veneering is thick. A painted softwood door for exterior work in an exposed place is preferable to a hardwood door unless solid.

Trim

Under trim are included door and window casings, baseboards, wainscoting, and picture moulding. Whenever possible, these should

be selected from stock sizes and patterns. Casings may be of one member, two members, or more. Hardwood casings most commonly in use are one member, $\frac{3}{4}$ x 4 $\frac{1}{2}$ mitred or with head casing and moulded cap; two members, $\frac{3}{4}$ x 4 and 1 $\frac{1}{16}$ x 1 $\frac{1}{2}$, base $\frac{3}{4}$ x 6, with a top mould and a mould or quarter round at the floor to cover the joint, wainscot cap 1 x 3 $\frac{1}{2}$. Wainscot is made either of lumber or of lincrusta separated by strips of lumber or plaster upon which are applied lumber panel mouldings. This is a very commonly used form of wall treatment in the best of houses. In the more expensive jobs the plastering is covered with canvas before the lumber mould is applied. Books of standard stock mouldings especially designed and manufactured from architects' drawings may be obtained from planing mills.

Windows

In the design of the window, provision should be made for screens and curtains. Sliding windows hung in weights are the most used. Casement sash are well adapted for small house or bungalow designs. One of the objections to casement windows is that they are difficult to make tight unless they swing out. There is, also, some difficulty in hanging the shades or placing the screens.

The Installation of Built-in Furniture

At a slight increase in first cost the installation of built-in furniture will add much to the value of the small house. The speculative builder knows the selling power of built-in china closets, book cases, mantel pieces, tables, and benches in the breakfast alcove, closet shelves and drawers, clothes poles, medicine cases, kitchen sink, and refrigerator compartments. Retail lumber dealers are fully equipped with pictures, drawings, and specifications so as to be of helpful service in procuring built-in features.

Good House Plan Services Are Now Available For All

The builder of a small house should know that it is the permanence of the architectural design which in the end will determine whether

he can resell to advantage if he must. Buyers are satisfied with paint and repairs if the design is attractive, but the ugly house of impractical design is a drug upon the market, no matter what its construction.

The architectural profession, through the American Institute of Architects, recognizing the need for better small house architecture, has established The Architects' Small House Service Bureau of the United States, Inc., with National Headquarters at 1200 Second Avenue, South, Minneapolis, Minnesota, and with Regional Bureaus located in Denver, Milwaukee, New York, Portland, Indianapolis, and Pittsburgh. For the first time there is a national professional source from which the small home builder may obtain accurate working drawings, specifications, and material schedules for well-designed houses at low cost.

The regional associations listed on page 12 of this bulletin, several associations of retail lumber dealers, and many individual lumber firms are offering plan services of a type which ought to be used by prospective home builders. The builder is not charged for needless detail drawings or unnecessary blueprints. The local retail lumber dealer, if he is an up-to-date merchant with plan services such as are readily available at small expense, is well able to serve the interests of the prospective builder to the best advantage and to save money for the buyer while he is doing it. If he does not himself give plan service, he will know of reliable associations representative of a high standard of building practice within the lumber industry from which such service is promptly available through his office.

Some Bureaus or individuals sell plans for **less than cost**, their profit being derived from charges due to changes in plans. The service furnished by retail lumber dealers or their associations is a part of their publicity work, the service not being conducted for profit but for the purpose of encouraging building.

A fairly representative and carefully selected list of the largest Bureaus or Associations, not

previously mentioned, offering Plan Services for small lumber-built houses, is given on Page 11.

Nearly all of these services offer not only the working drawings but also complete specifications explaining the construction details. Usually blue prints giving a scale drawing of each of the four sides of the house, basement plan, and floor plans, $\frac{1}{4}$ " to the foot, are included. Up-to-date dealers are prepared to quote guaranteed prices on all material needed to complete the dwelling. Duplicate plans and reverse plans may be had for a small charge. Plans sometimes are sent on two weeks' approval, thus giving the privilege of inspection and of securing cost figures in the local community before purchase.

The trade journals listed on page 11, and others of recognized merit, often contain valuable material for those who desire to study more fully the best current practices in planning and designing small houses.

Reliable plan service, plus good materials and good workmanship, will go far toward securing the construction of a home which will meet the primary needs of serviceability, economy, and beauty.

This is the day of the small house. Attention has been called to the fact that good architecture, which emphasizes simplicity, straightforwardness, and truth in design and the practical in plan, is as possible in the small house as in the mansion. The illustrations, herein, show the many possibilities for adapting these principles to the lumber-built house. Such a house lasts; it can be erected quickly; it can be enlarged and remodeled at small expense; and the necessary materials may be purchased in even the most remote communities. The lumber-built house of attractive architectural design costs no more than the cheerless, commonplace house built by "rule of thumb" methods. Moreover, its possession brings to the owner real personal comfort, satisfaction, and value. **This quality of adaptability has made the lumber-built house the most popular type of small house in America.**

WHERE RELIABLE PLAN SERVICE MAY BE SECURED

Associations of Retail Lumber Dealers

- | | |
|--|--|
| Illinois Lumber Merchants Association,
1301-2 Manhattan Bldg., Chicago, Ill. | Ohio Association of Retail Lumber Dealers,
Xenia, Ohio. |
| Michigan Retail Lumber Dealers' Association,
511-14 Wilson Bldg., Lansing, Mich. | Ontario Retail Lumber Dealers' Association,
26 Queen St., Toronto, Ontario, Canada. |
| Nebraska Lumber Dealers' Association,
1016 Terminal Bldg., Lincoln, Nebraska.
(Served by Plan Service of Northwestern.) | Pennsylvania Lumbermen's Association, Inc.,
212-5 Otis Bldg., Philadelphia, Pa.
(East Pennsylvania, Delaware, and Maryland.) |
| Northeastern Retail Lumbermen's Association,
Beckley Bldg., Rochester, N. Y.
(Massachusetts, Rhode Island, New York and Connecticut) | Retail Lumber Dealers' Association of Pennsylvania,
730 Park Bldg., Pittsburgh, Pa. |
| Northwestern Lumbermen's Association,
1026 McKnight Bldg., Minneapolis, Minn.
(Minnesota, Iowa, North and South Dakota, Wisconsin) | West Virginia Lumber & Builders' Supply Dealers' Association,
New Martinsville, West Virginia. |
| | Wisconsin Retail Lumber Dealers' Association,
632 M. & M. Bank Bldg., Milwaukee, Wisconsin. |

Other Associations

- | | |
|---|--|
| American Face Brick Association,
1721 People's Life Bldg., Chicago, Ill. | Lambie Concrete House Corporation,
53 State St., Boston, Mass. |
| Common Brick Mfrs. Association,
2121 Discount Bldg., Cleveland, Ohio. | Portland Cement Association,
111 W. Washington St., Chicago, Ill. |
| Indiana Limestone Quarrymen's Association,
Box 782, Bedford, Indiana. | |

RELIABLE PUBLICATIONS

Lumber Trade Journals

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|--|--|--|
| American Lumberman,
Manhattan Bldg., Chicago, Ill. | Lumber Trade Journal,
Commercial Pl., New Orleans, La. | Southern Lumberman,
Presbyterian Bldg., Nashville,
Tenn. |
| Gulf Coast Lumberman,
Carter Bldg., Houston, Tex. | Lumber World Review,
Transportation Bldg., Chicago, Ill. | Southern Lumber Journal,
Jacksonville, Fla. |
| Hardwood Record,
537 S. Dearborn St., Chicago, Ill. | Lumber & Veneer Consumer,
537 S. Dearborn St., Chicago, Ill. | The Timberman,
Spaulding Bldg., Portland, Ore. |
| Lumber,
Columbia Bldg., St. Louis, Mo. | Mississippi Valley Lumberman,
Lumber Exchange Bldg., Minneapolis, Minn. | West Coast Lumberman,
White-Henry-Stuart Bldg., Seattle,
Wash. |
| Lumberman's Review,
101 Park Ave., New York, N. Y. | New York Lumber Trade Journal,
17 W. 46th St., New York, N. Y. | |

Retail Lumber Journals

- | | | |
|--|--|--|
| California Lumber Merchant,
408 Fay Bldg., Los Angeles, Calif. | Northwestern Dealer,
1026 McKnight Bldg., Minneapolis, Minn. | The Retail Lumberman,
510 Gates Bldg., Kansas City, Mo. |
| Lumber Cooperator,
c/o Northeastern Retail Lumbermen's Ass'n, Beckley Bldg., Rochester, N. Y. | Retail Lumber Dealer,
820 Railway Exchange Bldg., Chicago, Ill. | Western Retail Lumberman,
Spokane, Washington. |
| | | Wood Construction,
Xenia, Ohio. |

Other Publications

- | | | |
|--|---|---|
| American Architect & Architectural Review,
243 W. 39th St., New York, N. Y. | Architectural Record,
115-119 W. 40th St. New York, N. Y. | Keith's Magazine,
17 W. 42nd St., New York, N. Y. |
| American Builder,
1827 Prairie Ave., Chicago, Ill. | Building Age,
239 W. 39th St., New York, N. Y. | National Builder,
542 S. Dearborn St., Chicago, Ill. |
| American Contractor,
131 No. Franklin St., Chicago, Ill. | House Beautiful,
8 Arlington St., Boston 17, Mass. | Pencil Points,
19 E. 24th St., New York, N. Y. |
| Architect & Engineer, Inc.,
626-27 Foxcroft Bldg., San Francisco, Calif. | House & Garden,
19 W. 44th St., New York, N. Y. | The Small House,
1220 Second Ave., South, Minneapolis, Minn. |
| Architectural Forum,
142 Berkley St., Boston, Mass. | Journal of American Inst. of Arch.,
Fisk Bldg., 250 West 57th St., New York, N. Y. | Western Architect,
215 South Market St., Chicago, Ill. |

WHERE ADDITIONAL SPECIFIC LUMBER INFORMATION MAY BE OBTAINED

AS the series of publications of the National Lumber Manufacturers Association deals with lumber and its uses in general, it is suggested that those desiring additional information regarding the respective species of woods listed below should make requests for definitions, grading rules, and publications concerning the special advantages and characteristics of each species to the following member associations affiliated with the National Lumber Manufacturers Association:

CALIFORNIA REDWOOD ASSOCIATION,
San Francisco, Calif.
Redwood

NORTHERN PINE MANUFACTURERS' ASSOCIATION,
Minneapolis, Minn.
Northern Pine

CALIFORNIA WHITE AND SUGAR PINE
MANUFACTURERS ASSOCIATION,
San Francisco, Calif.
Sugar Pine, California White Pine, Fir

SOUTHERN CYPRESS MANUFACTURERS'
ASSOCIATION,
New Orleans, La., and Jacksonville, Fla.
Cypress, Tupelo

GEORGIA-FLORIDA SAW MILL ASSOCIATION,
Jacksonville, Fla.
Southern Yellow Pine

SOUTHERN PINE ASSOCIATION,
New Orleans, La., and Jacksonville, Fla.
Southern Yellow Pine

HARDWOOD MANUFACTURERS INSTITUTE,
Chicago, Ill.
*Ash, Basswood, Beech, Birch, Cherry, Cypress, Chestnut,
Cottonwood, Elm, Gum, Hickory, Maple, Magnolia,
Oak, Poplar, Sycamore, Tupelo, Willow, Walnut*

WEST COAST LUMBERMEN'S ASSOCIATION,
Seattle, Wash., and Portland, Ore.
*Douglas Fir, West Coast Hemlock, Sitka Spruce, Western
Red Cedar, Port Orford Cedar*

MICHIGAN HARDWOOD MANUFACTURERS
ASSOCIATION,
Cadillac, Mich.
Maple, Birch, Beech, Basswood, Elm, Ash, Hemlock

NORTHERN HEMLOCK AND HARDWOOD
MANUFACTURERS ASSOCIATION,
Oshkosh, Wis.
Hemlock, Birch, Maple, Basswood, Elm, Ash, Beech

NORTH CAROLINA PINE ASSOCIATION,
Norfolk, Va.
North Carolina Pine

WESTERN PINE MANUFACTURERS ASSOCIATION,
Portland, Ore.
*Western White Pine, Idaho White Pine, Larch, Fir,
White Fir, Cedar*

For brief descriptions of the properties of the above-mentioned species and a bibliography of publications relating to them see Chapter 3 in the Timber Information Series.

The many valuable publications of the Forest Service, Department of Agriculture, relating not only to Forestry but to the species of trees and to various phases of lumber utilization in construction, are referred to in Chapter 1, Volume II.

NATIONAL LUMBER MANUFACTURERS ASSOCIATION

International Building,
Washington, D. C.

Conway Building,
Chicago, Ill.